

## **REMARKS**

This Amendment is fully responsive to the non-final Office Action dated March 8, 2007, issued in connection with the above-identified application. A Petition for a Two-Month Extension of Time accompanies this Amendment. Claims 1-13 are pending in the present application. With this Amendment, the specification, abstract, and independent claims 1, 6 and 10 have been amended. No new matter has been added by this Amendment; thus, reconsideration is respectfully requested.

To facilitate the Examiner's reconsideration of the application, the Applicant has provided a substitute specification and a replacement abstract. The changes to the specification and abstract include minor editorial and clarifying changes. No new matter has been added. In addition to the substitute specification and replacement abstract, a "marked-up" copy of the original specification and abstract are also enclosed.

In the Office Action, the following prior art rejections were made: claims 1-2 and 4-5 were rejected under 35 U.S.C. §102(b) as being anticipated by Yamaguchi (U.S. Patent No. 5,764,292, hereafter "Yamaguchi"); claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yamaguchi and further in view of Nishimura et al. (U.S. Patent No. 5,012,271, hereafter "Nishimura"); claim 6 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yamaguchi and further in view of Jeong et al. (U.S. Patent No. 5,634,149, hereafter "Jeong"); claim 7 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yamaguchi and further in view of Jeong and Nishimura; claims 10, 12 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Yamaguchi and further in view of Toguchi et al. (U.S. Patent No. 6,104,878, hereafter "Toguchi"); and claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yamaguchi and further in view of Toguchi and Nishimura.

The Applicant has amended independent claims 1, 6 and 10 to further distinguish over the cited prior art. As amended, independent claim 1 recites, in relevant part, "[a] blade driving device for use in cameras, the blade driving device comprising:...

a control means for drive-controlling the electromagnetic actuator and applying opening energization to the electromagnetic actuator so as to allow the blade to perform an opening motion before performing a closing motion in a photographable standby state in which the blade is to be kept in an opened state."

This feature is similarly recited in independent claims 6 and 10 (as amended). For example, claim 6 differs slightly reciting that the control means performs an opening motion before performing a closing motion in a photographable standby state in which the blade is to be kept in an opened state “when an amount of light incident on the image pickup element becomes equal to or less than a predetermined level.” Additionally, claim 10 recites that the control means performs an opening motion before performing a closing motion in a photographable standby state in which the blade is to be kept in an opened state “when a signal is output from a shock sensor used to detect an impulsive force.”

The present invention, as recited in independent claims 1, 6 and 10, is directed to a blade driving device for use in a camera. In particular, the blade driving device is used in a camera that is included as part of a mobile phone or the like. The present invention allows the mechanical blades (e.g., shutter blades, diaphragm blades or ND filter blades) of a camera to reliably perform an opening motion prior to a closing motion in a standby state even when the camera receives an impulsive outside force. Such an impulsive outside force is generally caused from a sudden dropping or bumping of the camera.

Conventional cameras in the standby state freely close the mechanical blades when such an impulsive outside force is experienced, which prevents photography from being performed. In the present invention, however, photography is still possible under this condition. That is, when an outside impulsive force is experienced by the camera, the blade driving device applies an open energization to the electromagnetic actuator of the mechanical blades (i.e., opening operation) before applying a closing energization to the electromagnetic actuator of the mechanical blades (i.e., closing operation). Additionally, since open energization is applied to the mechanical blades under the above conditions, without judging the state of the blades, control operations for the camera can be simplified. These features of the present invention are fully supported by the Applicant’s disclosures (see e.g., Figs. 6 and 7) and are not believed to be disclosed, taught or suggested by the cited prior art.

Yamaguchi discloses an image pickup apparatus that includes a first diaphragm with a light-reducing member disposed on a moving portion. In the Office Action, the Examiner relies primarily on Yamaguchi for disclosing the claimed “control means” recited in claim 1. Specifically, the

Examiner relies on col. 2, lines 33-39 of Yamaguchi. However, col. 2, lines 33-39 merely discloses that a CPU of the pickup apparatus controls actuators via a diaphragm driving circuit and a mechanism driving circuit. Additionally, the reference discloses that the control of the actuators is based on brightness and focus information. Nothing in the reference, however, suggests that the CPU *applies an open energization to the actuators so as to allow a blade or a diaphragm to perform an opening motion before performing a closing motion in the photographable standby state in which the blade or the diaphragm is kept in an opened state.*

In fact, the flow chart in Fig. 5 of Yamaguchi appears to illustrate more accurately the differences between the present invention and the image pickup apparatus in Yamaguchi. In Fig. 5, the diaphragm of the pickup apparatus is opened when a release button is depressed to a first distance and a switch SW1 is switched on. Next, when the release button is depressed to a second distance, switch SW2 is switched on and the diaphragm is stopped at a stop value. Finally, a photograph is taken (i.e. an exposure is performed) and a complete closing operation of the diaphragm is performed. The diaphragm is kept closed until the release button is depressed again. Thus, Yamaguchi, at best, illustrates that the CPU of the image pickup apparatus applies only a closing energization to the actuators of the diaphragm when the diaphragm is open in a standby state. Thus, independent claims 1 is patentably distinguished over Yamaguchi.

In the Office Action, the Examiner relies on the combination of Yamaguchi and Jeong for disclosing the “control means” recited in independent claim 6. As noted above, claim 6 differs slightly from independent claim 1 in that the *control means performs an opening motion before performing a closing motion in a photographable standby state in which the blade is to be kept in an opened state “when an amount of light incident on the image pickup element becomes equal to or less than a predetermined level.”* In the Office Action, the Examiner alleges that Yamaguchi discloses all the features recited in claim 6 except for “an amount of light incident on a pickup element less than or equal to a predetermined level in a photographic standby state” (see Office Action, page 5). However, the Examiner relies on Fig. 1 of Jeong for disclosing this feature.

The Applicant respectfully disagrees with the Examiner’s interpretation of Yamaguchi in view of Jeong. As noted above, Yamaguchi fails to disclose *a control means for drive-controlling the electromagnetic actuator and applying an open energization to actuators so as to allow a blade*

*or a diaphragm to perform an opening motion before performing a closing motion in the photographable standby state in which the blade or the diaphragm is to be kept in an opened state.* Additionally, Jeong merely discloses a control circuit that includes the use of a brightness measuring circuit for measuring the ambient light of a scene or object to be photographed. Based on a brightness measurement, a microcontroller computes an appropriate film exposure time consistent with an established iris opening time, and displays the exposure time. However, nothing in Jeong suggests how or if the brightness measurement can be used by *a control means for applying an open energization to actuators so as to allow a blade or a diaphragm to perform an opening motion before performing a closing motion in the photographable standby state in which the blade or the diaphragm is to be kept in an opened state.* Thus, independent claim 6 is patentably distinguished over Yamaguchi in view of Jeong.

In the Office Action, the Examiner relies on the combination of Yamaguchi and Toguchi for disclosing the “control means” recited in independent claims 10. As noted above, claim 10 differs slightly from independent claim 1 in that claim 10 recites that the *control means performs an opening motion before performing a closing motion in a photographable standby state in which the blade is to be kept in an opened state “when a signal is output from a shock sensor used to detect an impulsive force.”*

In the Office Action, the Examiner alleges that Yamaguchi discloses all the features recited in claim 10 except for “a signal that is output from a shock sensor used to detect an impulsive force in a photographic state” (see Office Action, page 8). However, the Examiner relies on Figs 5-7 and col. 9, lines 3-9 of Toguchi for disclosing this feature.

The Applicant again respectfully disagrees with the Examiner’s interpretation of Yamaguchi in view of Toguchi. As noted above, Yamaguchi fails to disclose *a control means for drive-controlling the electromagnetic actuator and applying an open energization to actuators so as to allow a blade or a diaphragm to perform an opening motion before performing a closing motion in the photographable standby state in which the blade or the diaphragm is to be kept in an opened state.* Additionally, Toguchi merely discloses a shock sensor for detecting an impact made on the main body of a camera. Specifically, the shock sensor detects an impact on the body of the camera and sends an output signal to a CPU. Similar to Jeong, nothing in Toguchi suggests if or how the

CPU can use such an output signal (i.e., shock or impact signal) for *applying an open energization to actuators so as to allow a blade or a diaphragm to perform an opening motion before performing a closing motion in the photographable standby state in which the blade or the diaphragm is to be kept in an opened state.*


Instead, Toguchi appears to disclose that, when an abnormality of a camera is detected the operation of, the camera is actually stopped and information regarding the abnormality is recorded. (see e.g., Toguchi, col. 12, lines 34-41). Thus, this would suggest that when an abnormal condition of the camera is detected only a closing operation of a diaphragm or blade is performed. Therefore, independent claim 10 is patentably distinguished over Yamaguchi in view of Toguchi.

Moreover, Nishimura fails to overcome the deficiencies noted above in Yamaguchi, Jeong and Toguchi. Nishimura discloses an exposure control device for use in cameras that includes a diaphragm blade that blocks light passing through an exposure aperture in a state in which photography cannot be performed. Nishimura fails to disclose *a control means for drive-controlling the electromagnetic actuator and applying an open energization to the actuators so as to allow a blade or a diaphragm to perform an opening motion before performing a closing motion in the photographable standby state in which the blade or diaphragm is to be kept in an opened state.* Accordingly, even if one of ordinary skill in the art were to combine the teachings of the cited prior art, the combination still would not teach or suggest all the features recited in independent claims 1, 6 and 10 (as amended).

Accordingly, independent claims 1, 6 and 10 are patentably distinguished over the cited reference. Additionally, dependent claims 2-5, 7-10 and 11-13 are patentably distinguish over the cited reference based at least on their dependency from independent claims 1, 6 and 10. In light of the above, the Applicant respectfully submits that all the pending claims are patentable over the prior art of record.

Additionally, the Applicant respectfully requests that the Examiner withdraw the rejections presented in the Office Action dated March 8, 2007, and pass this application to issue. The Examiner is invited to contact the undersigned attorney by telephone to resolve any remaining issues.

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August 8, 2007